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Preface

This volume contains research papers presented at the 5th IFIP International Conference on Computer Science and Its Applications (CIIA), held during May 20-21, 2015, in Saida, Algeria. CIIA 2015 continued the series of conferences whose main objective is to provide a forum for the dissemination of research accomplishments and to promote the interaction and collaboration between various research communities related to computer science and its applications. These conferences have been initiated by researchers from Algeria and extended to cover worldwide researchers focusing on promoting research, creating scientific networks, developing projects, as well as facilitating faculty and student exchanges, especially in Africa.

This year the CIIA conference attracted 225 submissions from 20 countries including: Algeria, Bangladesh, Belgium, Canada, China, Finland, France, India, Iran, Ireland, Italy, Jordan, Morocco, Norway, Poland, Qatar, Tunisia, United Arab Emirates, UK, and USA. In a rigorous reviewing process, the Program Committee (PC) selected 51 papers, which represents an acceptance rate of 22.6%. The PC included 200 researchers from 27 countries.

The accepted papers were organized into the four following research tracks: Computational Intelligence, co-chaired by: Sadok Ben Yahia (FST, Tunisia) and Nadjet Kamel (Setif University, Algeria); Security and Network Technologies, co-chaired by Nadjib Badache (CERIST, Algeria) and Alfredo Cuzzocrea (ICAR-CNR and University of Calabria, Italy); Information Technology, co-chaired by Jorge Bernardino (ISEC-Polytechnic Institute of Coimbra, Portugal) and Selma Khouri (ESI, Algiers, Algeria); as well as Software Engineering, co-chaired by Kamel Barkaoui (CNAM, Paris, France) and Abdelwahab Hamou-Lhadj (Concordia University, Montreal, Canada). Additionally, the conference hosted three keynote speakers, namely: Prof. Lynda Tamine-Lechani (IRIT Toukouse, France), Prof. Erich Neuhold (University of Vienna, Austria), and Prof. Mohamad Sawan (Polytechnique Montreal, Canada). This volume includes the abstracts of the keynote talks. We would like to express our warmest thanks to the keynote speakers.

We would also like to extend our gratitude to Prof. Erich Neuhold and the International Federation for Information Processing (IFIP) for accepting the CIIA papers to be published in the IFIP Advances in Information and Communication Technology (IFIP-AICT) by Springer.

We would also like to acknowledge the invaluable help of: the PC members for ensuring the quality of the scientific program, the Tahar Moulay University of Saida and the GeCoDe Laboratory, for hosting the conference and providing all the needed support, the track chairs, for managing the reviewing process, and Dr. Mickael Baron.
(ISAE-ENSMA, Poitiers, France) and Dr. Mahieddine Djoudi (SIC/XLIM, University of Poitiers, France) for Webmaster efforts. Last but not least, we thank the EasyChair team for making available their conference management system to CIIA. Finally, we thank the authors who submitted papers to the conference.

April 2015

Abdelmalek Amine
Erich J. Neuhold
Ladjel Bellatreche
Zakaria Elberrichi
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Invited Talks
Interoperability: Models and Semantics -
A Reoccurring Problem

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Abstract. Interoperability is a qualitative property of computing infrastructures that denotes the ability of the sending and receiving systems to exchange and properly interpret information objects across system boundaries.

Since this property is not given by default, the interoperability problem involves the representation of meaning and has been an active research topic for approximately four decades. Database models used schemas to express semantics and implicitly aimed at achieving interoperability by providing programming independence of data storage and access.

After a number of intermediate steps such as Hypertext and XML document models, the notions of semantics and interoperability became what they have been over the last ten years in the context of the World Wide Web and more recently the concept of Open Linked Data.

The talk will investigate the (reoccurring) problem of interoperability as it can be found in the massive data collections around the Big Data and Open Linked Data concepts. We investigate semantics and interoperability research from the point of view of information systems. It should give an overview of existing old and new interoperability techniques and point out future research directions, especially for concepts found in Open Linked Data, the Semantic WEB and Big Data.
Abstract. Implantable Brain-Computer-Brain Interfaces (BCIs) for diagnostic and recovery of neural vital functions are promising alternative to study neural activities underlying cognitive functions and pathologies. This Keynote address covers the architecture of typical BCI intended for wireless neurorecording and neurostimulation. Massively parallel multichannel spike recording through large arrays of microelectrodes will be introduced. Attention will be paid to low-power mixed-signal circuit design optimization. Advanced signal processing implementation such as adaptive thresholding, spike detection, data compression, and transmission will be described. Also, the talk includes Lab-on-chip technologies intended to build biosensors, and wireless data links and harvesting power to implants. Tests and validation of devices: electrical, mechanical, package, heat, reliability will be summarized. Case studies will be covered and include research activities dedicated to vision recovery through implant used to apply direct electrical microstimulation, to present the environment as phosphenes in the visual field of the blind. And we will summarize latest activities on locating epileptic seizures using multi-modal fNIRS/EEG processing, and will show the onset detecting seizure and techniques to stop it, using bioelectronic implant.
Abstract. Web search increasingly reflects problems grounded in the real-life world that requires the assistance of social resources. Social web search refers broadly to 1) the process of searching information over user-generated content (UGC) or 2) searching online with the help of users (such as friends, colleagues or experts) using large-scale social networking services. Examples of such services include Facebook, Twitter and MySpace and are considered as complementary to web search engines. Collaborative search is a kind of social search where small-scale groups of users are all together engaged in solving a shared information need. Collaborative and social search allow the gathering of users’ complementary knowledge and skills that lead to the emergence of collective intelligence.

The aim of this talk is to 1) outline the paradigm of social search, 2) investigate the research issues that it gives rise to and then 3) point out the opportunities it brings to nowadays society.

I will look back over the past recent years highlighting some of the major changes in social-centred approaches of information search and related main research findings. I will also give an overview and share some experiences we gained through our previous research investigations in the area of collaborative and social search.
Contents

Computational Intelligence: Meta-heuristics

Binary Bat Algorithm: On the Efficiency of Mapping Functions When Handling Binary Problems Using Continuous-Variable-Based Metaheuristics .......................................................... 3
  Zakaria Abd El Moiz Dahi, Chaker Mezioud, and Amer Draa

Relative Timed Model for Coordinated Multi Agent Systems .............. 15
  Said Layadi, Jean-Michel Ilié, Ilham Kitouni,
  and Djamel-Eddine Saidouni

Computational Intelligence: Object Recognition and Authentification

A Novel Technique for Human Face Recognition Using Fractal Code and Bi-dimensional Subspace .......................................................... 31
  Benouis Mohamed, Benkkadour Mohamed Kamel,
  Tlmesani Redwan, and Senouci Mohamed

Computational Intelligence: Image Processing

A New Rotation-Invariant Approach for Texture Analysis .................. 45
  Izem Hamouchene and Salïha Aouat

Multi-CPU/Multi-GPU Based Framework for Multimedia Processing ... 54
  Sidi Ahmed Mahmoudi and Pierre Manneback

Full-Reference Image Quality Assessment Measure Based on Color Distortion .......................................................... 66
  Zianou Ahmed Seghir and Fella Hachouf

Computational Intelligence: Machine Learning

Biomarker Discovery Based on Large-Scale Feature Selection and MapReduce .......................................................... 81
  Ahlam Kourid and Mohamed Batouche

Social Validation of Solutions in the Context of Online Communities: An Expertise-Based Learning Approach .................. 93
  Lydia Nahla Driff, Lamia Berkani, Ahmed Guessoum,
  and Abdellah Bendjahel
Remotely Sensed Data Clustering Using K-Harmonic Means Algorithm and Cluster Validity Index ...................................................... 105  
  
  Habib Mahi, Nezha Farhi, and Kaouter Labed

Computational Intelligence: BioInformatics

Comparison of Automatic Seed Generation Methods for Breast Tumor Detection Using Region Growing Technique .......................... 119  
  
  Ahlem Melouah

IHBA: An Improved Homogeneity-Based Algorithm for Data Classification ................................................................. 129  
  
  Fatima Bekaddour and Chikh Mohammed Amine

Multiple Guide Trees in a Tabu Search Algorithm for the Multiple Sequence Alignment Problem ................................................. 141  
  
  Tahar Mehenni

Information Technology: Text and Speech Processing

Noise Robust Features Based on MVA Post-Processing ....................... 155  
  
  Mohamed Cherif Amara Korba, Djemil Messadeg, Houcine Bourouba, and Rafik Djemili

Arabic Texts Categorization: Features Selection Based on the Extraction of Words’ Roots ................................................................. 167  
  
  Said Gadri and Abdelouahab Moussaoui

Restoration of Arabic Diacritics Using a Multilevel Statistical Model ... 181  
  
  Mohamed Seghir Hadj Ameur, Youcef Moulahoum, and Ahmed Guussoum

A New Multi-layered Approach for Automatic Text Summaries
Mono-Document Based on Social Spiders ........................................ 193  
  
  Mohamed Amine Boudia, Reda Mohamed Hamou, Abdelmalek Amine, Mohamed Elhadi Rahmani, and Amine Rahmani

Building Domain Specific Sentiment Lexicons Combining Information from Many Sentiment Lexicons and a Domain Specific Corpus .......... 205  
  
  Hugo Hammer, Anis Yazidi, Aleksander Bai, and Paal Engelstad

Improved Cuckoo Search Algorithm for Document Clustering ............... 217  
  
  Saida Ishak Boushaki, Nadjet Kamel, and Omar Bendjeghaba
Information Technology: Requirement Engineering

Supporting Legal Requirements in the Design of Public Processes ....... 231
   Amina Cherouana and Latifa Mahdaoui

Requirement Analysis in Data Warehouses to Support External Information .................................................... 243
   Mohamed Lamine Chouder, Rachid Chalal, and Waffa Setra

Engineering the Requirements of Data Warehouses: A Comparative Study of Goal-Oriented Approaches .................... 254
   Waffa Setra, Rachid Chalal, and Mohamed Lamine Chouder

Information Technology: OLAP and Web Services

Research and Analysis of the Stream Materialized Aggregate List ...... 269
   Marcin Gorawski and Krzysztof Pasterak

SOLAP On-the-Fly Generalization Approach Based on Spatial Hierarchical Structures ........................................... 279
   Tahar Ziouel, Khalissa Amieur-Derbal, and Kamel Boukhalfa

QoS-Aware Web Services Selection Based on Fuzzy Dominance ......... 291
   Amal Halfaoui, Fethallah Hadjila, and Fedoua Didi

Information Technology: Recommender Systems and Web Services

A Hybrid Model to Improve Filtering Systems ............................ 303
   Kharroubi Sahraoui, Dahmani Youcef, and Nouali Omar

Towards a Recommendation System for the Learner from a Semantic Model of Knowledge in a Collaborative Environment ................. 315
   Chahrazed Mediani, Marie-Hélène Abel, and Mahieddine Djoudi

Toward a New Recommender System Based on Multi-criteria Hybrid Information Filtering ............................... 328
   Hanane Zitouni, Omar Nouali, and Souham Meshoul

Information Technology: Ontologies

A New Approach for Combining the Similarity Values in Ontology Alignment ...................................................... 343
   Moussa Benaissa and Abderrahmane Khiat

Exact Reasoning over Imprecise Ontologies .................................. 355
   Mustapha Bourahla
Defining Semantic Relationships to Capitalize Content of Multimedia Resources .................................................... 367
  Mohamed Kharrat, Anis Jedidi, and Faiez Gargouri

Security and Network Technologies: Security

A Multi-agents Intrusion Detection System Using Ontology and Clustering Techniques ................................................. 381
  Imen Brahmi, Hanen Brahmi, and Sadok Ben Yahia

On Copulas-Based Classification Method for Intrusion Detection ........ 394
  Abdelkader Khobzaoui, Mhamed Mesfioui, Abderrahmane Yousfate, and Boucif Amar Bensaber

On-Off Attacks Mitigation against Trust Systems in Wireless Sensor Networks ............................................................. 406
  Nabila Labraoui, Mourad Gueroui, and Larbi Sekhri

A Real-Time PE-Malware Detection System Based on CHI-Square Test and PE-File Features ........................................ 416
  Mohamed Belaoued and Smaine Mazouzi

Security and Network Technologies: Wireless Sensor Networks

Balanced and Safe Weighted Clustering Algorithm for Mobile Wireless Sensor Networks .................................................. 429
  Dahane Amine, Berrached Nasr-Eddine, and Loukil Abdelhamid

Distributed Algorithm for Coverage and Connectivity in Wireless Sensor Networks ...................................................... 442
  Abdelkader Khelil and Rachid Beghdad

Optimizing Deployment Cost in Camera-Based Wireless Sensor Networks ................................................................. 454
  Mehdi Rouan Serik and Mejdi Kaddour

A version of LEACH Adapted to the Lognormal Shadowing Model ..... 465
  Chifaa Tabet Hellel, Mohamed Lehsaini, and Hervé Guyennet

Security and Network Technologies: Energy and Synchronisation

High Velocity Aware Clocks Synchronization Approach in Vehicular Ad Hoc Networks ................................................ 479
  Khedidja Medani, Makhlouf Aliouat, and Zibouda Aliouat
An Energy-Efficient Fault-Tolerant Scheduling Algorithm Based on Variable Data Fragmentation ........................................ 491
    Chafik Arar, Mohamed Salah Khireddine, Abdelouahab Belazoui, and Randa Megulati

Genetic Centralized Dynamic Clustering in Wireless Sensor Networks... 503
    Mekkaoui Khireddine, Rahmoun Abdellatif, and Gianluigi Ferrari

Security and Network Technologies: Potpourri

Region-Edge Cooperation for Image Segmentation Using Game Theory ................................................................. 515
    Omar Boudraa and Karima Benatchba

Improved Parameters Updating Algorithm for the Detection of Moving Objects .......................................................... 527
    Brahim Farou, Hamid Seridi, and Herman Akdag

Towards Real-Time Co-authoring of Linked-Data on the Web........ 538
    Moulay Driss Mechaoui, Nadir Guetmi, and Abdessamad Imine

Software Engineering: Modeling and Meta Modeling

A High Level Net for Modeling and Analysis Reconfigurable Discrete Event Control Systems ........................................ 551
    Ahmed Kheldoun, Kamel Barkaoui, JiaFeng Zhang, and Malika Ioualalen

Hybrid Approach for Metamodel and Model Co-evolution .................. 563
    Fouzia Anguel, Abdelkrim Amirat, and Nora Bounour

Extracting and Modeling Design Defects Using Gradual Rules and UML Profile .......................................................... 574
    Mohamed Maddeh and Sarra Ayouni

An Approach to Integrating Aspects in Agile Development ............ 584
    Tadjer Houda and Meslati Djamel

Software Engineering: Checking and Verification

On the Optimum Checkpointing Interval Selection for Variable Size Checkpoint Dumps ........................................... 599
    Samy Sadi and Belabbas Yagoubi

Monitoring Checklist for Ceph Object Storage Infrastructure .......... 611
    Pragya Jain, Anita Goel, and S.C. Gupta